IN THE CLAIMS:

Please cancel originally-filed claims 1-102, without prejudice. In addition, please add new claims 103-306, as provided below. The listing of these claims are as follows:

Claims 1-102 (Canceled).

103. (New) An apparatus for optical imaging, comprising:

a device receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a non-reflective reference;

at least one spectral separating unit which separates spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and a combination of the first and second electro-magnetic radiation into frequency components; and

at least one detection arrangement including a plurality of detectors, each detector capable of detecting at least a portion of at least one of the frequency components,

wherein at least one of:

a. the first and second electro-magnetic radiations interfere with one another, and

b. the frequency components of the first and second electro-magnetic radiations interfere with one another.

104. (New) The apparatus according to claim 103, wherein the non-reflective reference is a transmissive reference.

105. (New) The apparatus according to claim 103, further comprising at least one polarization controller.

106. (New) The apparatus according to claim 103, further comprising at least one polarization modulator which is positioned in a path of at least one of the first electro-magnetic radiation and the second electro-magnetic radiation.

107. (New) The apparatus according to claim 103, further comprising:

a source generating a third electro-magnetic radiation; and

at least one polarization modulator which is positioned in a path of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and the third electro-magnetic radiation.

108. (New) The apparatus according to claim 103, further comprising:

a source generating a third electromagnetic radiation; and

a splitter configured to separate the third electro-magnetic radiation into a fourth electro-magnetic radiation directed to the reference and a fifth electro-magnetic radiation directed to the sample.

109. (New) The apparatus according to claim 108, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

110. (New) The apparatus according to claim 103, further comprising a splitter configured to combine the first and second electro-magnetic radiations.

111. (New) The apparatus according to claim 110, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

112. (New) The apparatus according to claim 103, wherein the detectors comprise at least one of (i) at least one singe-dimensional detector array, and (ii) at least one multi-dimensional detector array.

113. (New) The apparatus according to claim 103, wherein the spectral separating unit comprises at least one of (i) at least one reflection grating, (ii) at least one transmission grating, and (iii) at least one spectrally dispersive component.

114. (New) The apparatus according to claim 103, further comprising at least one charge coupled device coupled to the at least one detection arrangement.

115. (New) The apparatus according to claim 103, further comprising at least one bandpass filter coupled to the at least one detection arrangement.

116. (New) The apparatus according to claim 115, wherein the bandpass filter is an electronic bandpass filter.

117. (New) The apparatus according to claim 103, further comprising at least one analog to digital converter coupled to the at least one detection arrangement.

118. (New) The apparatus according to claim 103, further comprising at least one processing arrangement receiving information which is at least partially based on the at least one of the frequency components.

119. (New) The apparatus according to claim 103, further comprising at least one acousto-optic modulator coupled to the at least one detection arrangement.

120. (New) The apparatus according to claim 103, wherein at least two of the detectors detect a common one of the frequency components, wherein a first one of the at least two of the detectors receives a first signal which has a first phase difference between the first and second electro-magnetic radiation, and a second one of at least two of the detectors receives a second signal which has a second phase difference between the first and second electro-magnetic radiation, the first and second phase differences being different from one another.

121. (New) The apparatus according to claim 120, wherein the first and second ones of the detectors detect the common one of the frequency components in an approximately simultaneous manner.

122. (New) The apparatus according to claim 120, wherein the first and second phase differences are different from one another by approximately periodic of at least one of 15, 30, 45, 60, 75, 90 and 180 degrees.

123. (New) The apparatus according to claim 103, wherein the detection arrangement generates at least one signal based on the frequency components and reducing noise of the at least one signal.

124. (New) The apparatus according to claim 103, wherein the detection arrangement is capable of receiving at least two electro-magnetic radiations, and detecting a polarization state of at least one of the electro-magnetic radiations.

125. (New) The apparatus according to claim 124, wherein the received electro-magnetic radiations are generated by splitting a combination of the first and second electro-magnetic radiations using a polarization-sensitive arrangement.

126. (New) The apparatus according to claim 124, wherein a first one of the at least two of the detectors receives a first signal which has a first polarization of at least one of the first and second electro-magnetic radiations, and a second one of at least two of the detectors receives a second signal which has a second polarization of at least one of the first and second electro-magnetic radiations, the first and second polarization being different from one another.

127. (New) The apparatus according to claim 103, further comprising:

at least one first arrangement detecting a signal relating to the first and second electro-magnetic radiations, and determining a relative phase difference between the first and second electro-magnetic radiations; and

at least one second arrangement controlling at least one of the first and second electro-magnetic radiations based on the relative phase difference so as to facilitate a generation of at least one image associated with at least one of the first and second arms

128. (New) The apparatus according to claim 127, wherein the second arrangement controls a phase of at least one of the first and second electro-magnetic radiations.

129. (New) The apparatus according to claim 127, wherein the second arrangement maximizes a signal-to-noise ratio of a signal associated with the at least one image.

130. (New) A method for optical imaging, comprising the steps of:

receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a non-reflective reference;

separating spectrum of at least one of the first electro-magnetic radiation, the second light signal and a combination of the first and second light signals into frequency components; and

enabling at least one detection of at least a portion of at least one of the frequency components using a plurality of detectors,

wherein at least one of:

a. the first and second electro-magnetic radiations interfere with one another, and

b. the frequency components of the first and second electro-magnetic radiations interfere with one another.

131. (New) An apparatus for imaging, comprising:

a device receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a reference;

at least one of spectral separating unit which separates spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and combination of the first and second electro-magnetic radiations into frequency components; and

at least one detection arrangement including a plurality of detectors, each detector capable of detecting at least a portion of at least one of the frequency components, wherein at least two of the detectors detect a common one of the frequency components, wherein a first one of the at least two of the detectors receives a first signal which has a first phase difference between the first and second electro-magnetic radiation, and a second one of at least two of the detectors receives a second signal which has a second phase difference between the first and second electro-magnetic radiation, the first and second phase differences being different from one another,

wherein at least one of:

a. the first and second electro-magnetic radiations interfere with one another, and

b. the frequency components of the first and second electro-magnetic radiations interfere with one another.

132. (New) The apparatus according to claim 131, wherein the first and second ones of the detectors detect the common one of the frequency components in an approximately simultaneous manner.

133. (New) The apparatus according to claim 131, wherein the first and second phase differences are different from one another by approximately periodic of at least one of 15, 30, 45, 60, 75, 90 and 180 degrees.

134. (New) The apparatus according to claim 131, wherein the reference is a transmissive reference.

135. (New) The apparatus according to claim 131, further comprising at least one polarization controller.

136. (New) The apparatus according to claim 131, further comprising at least one polarization modulator which is positioned in a path of at least one of the first electro-magnetic radiation and the second electro-magnetic radiation.

137. (New) The apparatus according to claim 131, further comprising:

a source generating a third electro-magnetic radiation; and

at least one polarization modulator which is positioned in a path of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and the third electro-magnetic radiation.

138. (New) The apparatus according to claim 131, further comprising:

a source generating a third electromagnetic radiation; and

a splitter configured to separate the third electro-magnetic radiation into a fourth electro-magnetic radiation directed to the reference and a fifth electro-magnetic radiation directed to the sample, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

139. (New) The apparatus according to claim 138, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

140. (New) The apparatus according to claim 131, further comprising a splitter configured to combine the first and second electro-magnetic radiations, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

141. (New) The apparatus according to claim 140, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

142. (New) The apparatus according to claim 131, wherein the detectors comprise at least one of (i) at least one singe-dimensional detector array, and (ii) at least one multi-dimensional detector array.

143. (New) The apparatus according to claim 131, wherein the spectral separating unit comprises at least one of (i) at least one reflection grating, (ii) at least one transmission grating, and (iii) at least one spectrally dispersive component.

144. (New) The apparatus according to claim 131, further comprising at least one charge coupled device coupled to the at least one detection arrangement.

145. (New) The apparatus according to claim 131, further comprising at least one bandpass filter coupled to the at least one detection arrangement.

146. (New) The apparatus according to claim 145, wherein the bandpass filter is an electronic bandpass filter.

147. (New) The apparatus according to claim 131, further comprising at least one analog to digital converter coupled to the at least one detection arrangement.

148. (New) The apparatus according to claim 131, further comprising at least one processing arrangement receiving information which is at least partially based on the at least one of the frequency components.

149. (New) The apparatus according to claim 131, further comprising at least one acousto-optic modulator coupled to the at least one detection arrangement.

150. (New) The apparatus according to claim 131, wherein the reference is non-reflective.

151. (New) The apparatus according to claim 131, wherein the detection arrangement generates at least one signal based on the frequency components and reducing noise of the at least one signal.

152. (New) The apparatus according to claim 131, wherein the detection arrangement is capable of receiving at least two electro-magnetic radiations, and detecting a polarization state of at least one of the electro-magnetic radiations.

153. (New) The apparatus according to claim 131, wherein the received electro-magnetic radiations are generated by splitting a combination of the first and second electro-magnetic radiations using a polarization-sensitive arrangement.

154. (New) The apparatus according to claim 131, wherein a first one of the at least two of the detectors receives a first signal which has a first polarization of at least one of the first and second electro-magnetic radiations, and a second one of at least two of the detectors receives a second signal which has a second polarization of at least one of the first and second electro-magnetic radiations, the first and second polarization being different from one another.

155. (New) The apparatus according to claim 131, further comprising:

at least one first arrangement detecting a signal relating to the first and second electro-magnetic radiations, and determining a relative phase difference between the first and second electro-magnetic radiations; and

at least one second arrangement controlling at least one of the first and second electro-magnetic radiations based on the relative phase difference so as to facilitate a generation of at least one image associated with at least one of the first and second arms

156. (New) The apparatus according to claim 155, wherein the second arrangement controls a phase of at least one of the first and second electro-magnetic radiations.

157. (New) The apparatus according to claim 155, wherein the second arrangement maximizes a signal-to-noise ratio of a signal associated with the at least one image.

158. (New) A method for imaging, comprising:

receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a reference;

separating spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and combination of the first and second electro-magnetic radiations into frequency components; and

enabling at least one detection of at least a portion of at least one of the frequency components using a plurality of detectors, wherein at least two of the detectors detect a common one of the frequency components, wherein a first one of the at least two of the detectors receives a first signal which has a first phase difference between the first and second electro-magnetic radiation, and a second one of at least two of the detectors receives a second signal which has a second phase difference between the first and second electro-magnetic radiation, the first and second phase differences being different from one another,

wherein at least one of:

a. the first and second electro-magnetic radiations interfere with one another, and

b. the frequency components of the first and second electro-magnetic radiations interfere with one another.

159. (New) An apparatus for imaging, comprising:

a device receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a reference;

at least one of spectral separating unit which separates spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and a combination of the first and second electro-magnetic radiations into frequency components; and

at least one detection arrangement including a plurality of detectors, each detector capable of detecting at least a portion of at least one of the frequency components, wherein the detection arrangement generates at least one signal based on the frequency components and reducing noise of the at least one signal,

wherein at least one of:

a. the first and second electro-magnetic radiations interfere with one another, and

b. the frequency components of the first and second electro-magnetic radiations interfere with one another.

160. (New) The apparatus according to claim 159, wherein the first and second ones of the detectors detect the common one of the frequency components in an approximately simultaneous manner.

161. (New) The apparatus according to claim 159, wherein the first and second phase differences are different from one another by approximately periodic of at least one of 15, 30, 45, 60, 75, 90 and 180 degrees.

162. (New) The apparatus according to claim 159, wherein the reference is a transmissive reference.

163. (New) The apparatus according to claim 159, further comprising at least one polarization controller.

164. (New) The apparatus according to claim 159, further comprising at least one polarization modulator which is positioned in a path of at least one of the first electro-magnetic radiation and the second electro-magnetic radiation.

165. (New) The apparatus according to claim 159, further comprising:

a source generating a third electro-magnetic radiation; and

at least one polarization modulator which is positioned in a path of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and the third electro-magnetic radiation.

166. (New) The apparatus according to claim 159, further comprising:

a source generating a third electromagnetic radiation; and

a splitter configured to separate the third electro-magnetic radiation into a fourth electro-magnetic radiation directed to the reference and a fifth electro-magnetic radiation

directed to the sample, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

167. (New) The apparatus according to claim 166, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

168. (New) The apparatus according to claim 159, further comprising a splitter configured to combine the first and second electro-magnetic radiations, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

169. (New) The apparatus according to claim 168, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

170. (New) The apparatus according to claim 159, wherein the detectors comprise at least one of (i) at least one singe-dimensional detector array, and (ii) at least one multi-dimensional detector array.

171. (New) The apparatus according to claim 159, wherein the spectral separating unit comprises at least one of (i) at least one reflection grating, (ii) at least one transmission grating, and (iii) at least one spectrally dispersive component.

172. (New) The apparatus according to claim 159, further comprising at least one charge coupled device coupled to the at least one detection arrangement.

173. (New) The apparatus according to claim 159, further comprising at least one bandpass filter coupled to the at least one detection arrangement.

174. (New) The apparatus according to claim 173, wherein the bandpass filter is an electronic bandpass filter.

175. (New) The apparatus according to claim 159, further comprising at least one analog to digital converter coupled to the at least one detection arrangement.

176. (New) The apparatus according to claim 159, further comprising at least one processing arrangement receiving information which is at least partially based on the at least one of the frequency components.

177. (New) The apparatus according to claim 159, further comprising at least one acousto-optic modulator coupled to the at least one detection arrangement.

178. (New) The apparatus according to claim 159, wherein the reference is non-reflective.

179. (New) The apparatus according to claim 159, wherein the detection arrangement is capable of receiving at least two electro-magnetic radiations, and detecting a polarization state of at least one of the electro-magnetic radiations.

180. (New) The apparatus according to claim 179, wherein the received electro-magnetic radiations are generated by splitting a combination of the first and second electro-magnetic radiations using a polarization-sensitive arrangement.

181. (New) The apparatus according to claim 179, wherein a first one of the at least two of the detectors receives a first signal which has a first polarization of at least one of the first and second electro-magnetic radiations, and a second one of at least two of the detectors receives a second signal which has a second polarization of at least one of the first and second electro-magnetic radiations, the first and second polarization being different from one another.

182. (New) The apparatus according to claim 159, further comprising:

at least one first arrangement detecting a signal relating to the first and second electro-magnetic radiations, and determining a relative phase difference between the first and second electro-magnetic radiations; and

at least one second arrangement controlling at least one of the first and second electro-magnetic radiations based on the relative phase difference so as to facilitate a generation of at least one image associated with at least one of the first and second arms

183. (New) The apparatus according to claim 182, wherein the second arrangement controls a phase of at least one of the first and second electro-magnetic radiations.

184. (New) The apparatus according to claim 182, wherein the second arrangement maximizes a signal-to-noise ratio of a signal associated with the at least one image.

185. (New) A method for imaging, comprising:

receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a reference;

separating spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and combination of the first and second electro-magnetic radiations into frequency components; and

enabling at least one detection of at least a portion of at least one of the frequency components using a plurality of detectors, wherein at least two of the detectors detect a common one of the frequency components, wherein a first one of the at least two of the detectors receives a first signal which has a first phase difference between the first and second electro-magnetic radiation, and a second one of at least two of the detectors receives a second signal which has a second phase difference between the first and second electro-magnetic radiation, the first and second phase differences being different from one another,

wherein at least one of:

a. the first and second electro-magnetic radiations interfere with one another, and

b. the frequency components of the first and second electro-magnetic radiations interfere with one another.

186. (New) An apparatus for imaging, comprising:

a device receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a reference;

at least one of spectral separating unit which separates spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and a combination of the first and second electro-magnetic radiations into frequency components; and

at least one detection arrangement including a plurality of detectors, each detector capable of detecting at least a portion of at least one of the frequency components, wherein the detection arrangement is capable of receiving at least two electro-magnetic radiations and detecting a polarization state of at least one of the electro-magnetic radiations,

wherein at least one of:

a. the first and second electro-magnetic radiations interfere with one another, and

b. the frequency components of the first and second electro-magnetic radiations interfere with one another.

187. (New) The apparatus according to claim 186, wherein the first and second ones of the detectors detect the common one of the frequency components in an approximately simultaneous manner.

188. (New) The apparatus according to claim 186, wherein the first and second phase differences are different from one another by approximately periodic of at least one of 15, 30, 45, 60, 75, 90 and 180 degrees.

189. (New) The apparatus according to claim 186, wherein the reference is a transmissive reference.

190. (New) The apparatus according to claim 186, further comprising at least one polarization controller.

191. (New) The apparatus according to claim 186, further comprising at least one polarization modulator which is positioned in a path of at least one of the first electro-magnetic radiation and the second electro-magnetic radiation.

192. (New) The apparatus according to claim 186, further comprising:

a source generating a third electro-magnetic radiation; and

at least one polarization modulator which is positioned in a path of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and the third electro-magnetic radiation.

193. (New) The apparatus according to claim 186, further comprising:

a source generating a third electromagnetic radiation; and

a splitter configured to separate the third electro-magnetic radiation into a fourth electro-magnetic radiation directed to the reference and a fifth electro-magnetic radiation directed to the sample, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

194. (New) The apparatus according to claim 193, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

195. (New) The apparatus according to claim 186, further comprising a splitter configured to combine the first and second electro-magnetic radiations, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

196. (New) The apparatus according to claim 195, wherein the splitter is at least one of a fiberoptic splitter and a bulk optic splitter.

197. (New) The apparatus according to claim 186, wherein the detectors comprise at least one of (i) at least one singe-dimensional detector array, and (ii) at least one multi-dimensional detector array.

198. (New) The apparatus according to claim 186, wherein the spectral separating unit comprises at least one of (i) at least one reflection grating, (ii) at least one transmission grating, and (iii) at least one spectrally dispersive component.

198. (New) The apparatus according to claim 186, further comprising at least one charge coupled device coupled to the at least one detection arrangement.

200. (New) The apparatus according to claim 186, further comprising at least one bandpass filter coupled to the at least one detection arrangement.

201. (New) The apparatus according to claim 200, wherein the bandpass filter is an electronic bandpass filter.

202. (New) The apparatus according to claim 186, further comprising at least one analog to digital converter coupled to the at least one detection arrangement.

203. (New) The apparatus according to claim 186, further comprising at least one processing arrangement receiving information which is at least partially based on the at least one of the frequency components.

204. (New) The apparatus according to claim 186, further comprising at least one acousto-optic modulator coupled to the at least one detection arrangement.

205. (New) The apparatus according to claim 186, wherein the reference is non-reflective.

206. (New) The apparatus according to claim 186, wherein the received electro-magnetic radiations are generated by splitting a combination of the first and second electro-magnetic radiations using a polarization-sensitive arrangement.

207. (New) The apparatus according to claim 186, wherein a first one of the at least two of the detectors receives a first signal which has a first polarization of at least one of the first and second electro-magnetic radiations, and a second one of at least two of the detectors receives a second signal which has a second polarization of at least one of the

first and second electro-magnetic radiations, the first and second polarization being different from one another.

208. (New) The apparatus according to claim 186, further comprising:

at least one first arrangement detecting a signal relating to the first and second electro-magnetic radiations, and determining a relative phase difference between the first and second electro-magnetic radiations; and

at least one second arrangement controlling at least one of the first and second electro-magnetic radiations based on the relative phase difference so as to facilitate a generation of at least one image associated with at least one of the first and second arms

209. (New) The apparatus according to claim 208, wherein the second arrangement controls a phase of at least one of the first and second electro-magnetic radiations.

210. (New) The apparatus according to claim 208, wherein the second arrangement maximizes a signal-to-noise ratio of a signal associated with the at least one image.

211. (New) The apparatus according to claim 186, wherein the detectors are provided as a single detection array.

212. (New) The apparatus according to claim 186, wherein the polarization state of the first electro-magnetic radiation is determined from electro-magnetic radiations received by the detectors.

213. (New) The apparatus according to claim 186, wherein the polarization state of the first electro-magnetic radiation is determined from at least one of an amplitude and a phase difference of electro-magnetic radiations received by the detectors.

214. (New) The apparatus according to claim 208, wherein the phase difference is determined from an amplitude of electro-magnetic radiations received by the detectors.

215. (New) A method for imaging, comprising:

receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a reference;

separating spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and combination of the first and second electro-magnetic radiations into frequency components; and

enabling at least one detection of at least a portion of at least one of the frequency components using at least one detection arrangement, wherein the detection arrangement is capable of receiving at least two electro-magnetic radiations and detecting a polarization state of at least one of the electro-magnetic radiations,

wherein at least one of:

a. the first and second electro-magnetic radiations interfere with one another, and

b. the frequency components of the first and second electro-magnetic radiations interfere with one another.

216. (New) An apparatus for imaging, comprising:

a device receiving at least one first electro-magnetic radiation from a first arm and at least one second electro-magnetic radiation from a second arm;

at least one first arrangement detecting a signal relating to the first and second electro-magnetic radiations, and determining a relative phase difference between the first and second electro-magnetic radiations; and

at least one second arrangement controlling at least one of the first and second electro-magnetic radiations based on the relative phase difference so as to facilitate a generation of at least one image associated with at least one of the first and second arms,

wherein at least one of:

a. the first and second electro-magnetic radiations interfere with one another, and

b. the frequency components of the first and second electro-magnetic radiations interfere with one another.

217. (New) The apparatus according to claim 216, further comprising a plurality of detectors detecting a common one of frequency components in an approximately simultaneous manner.

218. (New) The apparatus according to claim 216, wherein the phase differences are different from one another by approximately periodic of at least one of 15, 30, 45, 60, 75, 90 and 180 degrees.

219. (New) The apparatus according to claim 216, wherein the first arm is a transmissive reference.

220. (New) The apparatus according to claim 216, further comprising at least one polarization controller.

221. (New) The apparatus according to claim 216, further comprising at least one polarization modulator which is positioned in a path of at least one of the first electro-magnetic radiation and the second electro-magnetic radiation.

222. (New) The apparatus according to claim 216, further comprising:

a source generating a third electro-magnetic radiation; and

at least one polarization modulator which is positioned in a path of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and the third electro-magnetic radiation.

223. (New) The apparatus according to claim 216, wherein at least one of the first and second arrangement comprise at least one of (i) at least one singe-dimensional detector array, and (ii) at least one multi-dimensional detector array.

224. (New) The apparatus according to claim 216, further comprising a spectral separating unit which is at least one of (i) at least one reflection grating, (ii) at least one transmission grating, and (iii) at least one spectrally dispersive component.

225. (New) The apparatus according to claim 216, further comprising at least one charge coupled device coupled to at least one of the first and second arrangements.

226. (New) The apparatus according to claim 216, further comprising at least one bandpass filter coupled to at least one of the first and second arrangements.

227. (New) The apparatus according to claim 226, wherein the bandpass filter is an electronic bandpass filter.

228. (New) The apparatus according to claim 216, further comprising at least one analog to digital converter coupled to at least one of the first and second arrangements.

229. (New) The apparatus according to claim 228, further comprising at least one processing arrangement receiving information which is at least partially based on at least one of the frequency components.

230. (New) The apparatus according to claim 216, further comprising at least one acousto-optic modulator coupled to the at least one detection arrangement.

231. (New) The apparatus according to claim 216, wherein the first arm is a non-reflective reference.

232. (New) The apparatus according to claim 216, wherein at least one of the first and second arrangement is capable of receiving at least two electro-magnetic radiations, and detecting a polarization state of at least one of the electro-magnetic radiations.

233. (New) The apparatus according to claim 232, wherein the received electro-magnetic radiations are generated by splitting a combination of the first and second electro-magnetic radiations using a polarization-sensitive arrangement.

234. (New) The apparatus according to claim 232, wherein a first one of the at least two of the detectors receives a first signal which has a first polarization of at least one of the first and second electro-magnetic radiations, and a second one of at least two of the detectors receives a second signal which has a second polarization of at least one of the first and second electro-magnetic radiations, the first and second polarization being different from one another.

235. (New) The apparatus according to claim 216, wherein the second arrangement controls a phase of at least one of the first and second electro-magnetic radiations.

236. (New) The apparatus according to claim 216, wherein the second arrangement maximizes a signal-to-noise ratio of a signal associated with the at least one image.

237. (New) A method for imaging, comprising:

receiving at least one first electro-magnetic radiation from a first arm and at least one second electro-magnetic radiation from a second arm;

detecting a signal relating to the first and second electro-magnetic radiations;

determining a relative phase difference between the first and second electro-magnetic radiations; and

controlling at least one of the first and second electro-magnetic radiations based on the relative phase difference so as to facilitate a generation of at least one image associated with at least one of the first and second arms,

wherein at least one of:

a. the first and second electro-magnetic radiations interfere with one another, and

b. the frequency components of the first and second electro-magnetic radiations interfere with one another.

238. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies; and

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit and including at least one transimpedance amplifier associated therewith.

239. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies; and

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit and including at least one band pass filter associated therewith.

240. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies;

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit; and

d) at least one source of electromagnetic radiation having a temporal coherence lower than about 10 μm.

241. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies; and

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit and being balanced to reduce noise.

242. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies;

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit; and

d) a signal processing unit which is configured to process signal received from the detectors, and reconstruct longitudinal information from within at least one arm of the interferometer, wherein the processing unit further includes at least one of an analog band pass filter and a digital band pass filter.

243. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies;

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit; and

d) a unit receiving information associated with the portion, the unit being at least one of (i) a phase modulator that is communicatively coupled with the interferometer, and (ii) a demodulator that is communicatively coupled with the detectors.

244. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies;

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit; and

d) an autoranging arrangement communicatively coupled to the interferometer.

245. (New) The apparatus of claim 244, wherein the autoranging arrangement is configured to:

i) obtain a first depth profile of a sample,

ii) locate a surface location of the sample, and

iii) modify a path length difference of the interferometer.

246. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies;

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit; and

d) a motionless nonmechanical arrangement which is capable of introducing a path length difference.

247. (New) The apparatus of claim 246, wherein the nonmechanical arrangement is configured to introduce a frequency dependent phase change.

248. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies; and

c) a plurality of detectors which is a two-dimensional array, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit.

249. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies;

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit; and

d) a polarization separating unit cooperating with the spectral separating unit so as to separate light into distinct polarization states.

250. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies, wherein the spectral separating unit comprises at least one of (i) an addressable mirror array, (ii) a linear array of optical filters, (iii) a waveguide filter, and (iv) waveguide gratings; and

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit.

251. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies, wherein the spectral separating unit splits the signal into a plurality of bands, whereby at least one of the bands comprises spectra that has a comb-like structure; and

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit.

252. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies;

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit; and

d) a processing unit which is adapted to reconstruct the signal from the detectors by a mathematical manipulation of each plurality of signals obtained from the detectors.

253. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies;

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit; and

d) an arrangement configured to track a phase of the signal of the interferometer.

254. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) an arrangement generating a path length difference that is a fraction of a ranging depth of the interferometer;

c) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies which utilizes a signal received from the arrangement; and

d) a plurality of detectors, each detector capable of detecting at least a portion of the optical frequencies received from the spectral separating unit.

255. (New) The apparatus of claim 254, wherein the arrangement comprises a fiber stretching arrangement.

256. (New) The apparatus of claim 254, wherein the arrangement comprises a piezoelectric transducer configured to perform free space translational scanning.

257. (New) The apparatus of claim 254, wherein the arrangement comprises a phase control optical delay line.

258. (New) The apparatus of claim 254, wherein the arrangement scans over at least a fraction of the ranging depth equal to one over the number of detectors.

259. (New) The apparatus of claim 254, wherein the arrangement further comprises a carrier frequency generator.

260. (New) The apparatus of claim 254, wherein the arrangement comprises an acoustic modulator.

261. (New) The apparatus of claim 254, wherein the arrangement comprises an electro-optic modulator.

262. (New) The apparatus of claim 254, wherein the arrangement comprises a phase control RSOD.

263. (New) The apparatus of claim 254, wherein the arrangement produces a delay that has a distance that is less than a range of a sample arm.

264. (New) An apparatus for controlling a phase of a signal, comprising:

a system which is configured to:

(a) obtain at least one interference signal which is based on a first signal from a sample and a second signal from a reference;

(b) during (a), modulate the phase of the at least one interference signal to produce first information;

(c) determine offset information between the first signal and the second signal based on the first information;

(d) control the phase of the interference signal using the offset information to generate second information; and

(e) generate an image which includes a plurality of depth profiles of at least a portion of the sample using the second information.

265. (New) The apparatus according to claim 264, wherein the first information includes a modulated interference signal.

266. (New) The apparatus according to claim 264, wherein the system is further configured to demodulate the first information using at least one periodic signal, and wherein the offset information is determined based on the demodulated first information.

267. (New) The apparatus according to claim 264, wherein the offset information includes a path-length difference between the first signal and the second signal.

268. (New) The apparatus according to claim 267, wherein the system is further configured to control an initial range of the path-length difference.

269. (New) The apparatus according to claim 268, wherein the range is modulo a wavelength of the path-length difference.

270. (New) The apparatus according to claim 267, wherein the path-length difference is an optical path-length difference.

271. (New) The apparatus according to claim 264, wherein the phase is controlled by modifying a path-length difference between the first signal and the second signal.

272. (New) The apparatus according to claim 271, wherein the path-length difference is an optical path-length difference.

273. (New) The apparatus according to claim 264, wherein the second information includes a phase-stabilized signal which is associated with the interference signal.

274. (New) The apparatus according to claim 264, wherein the second information includes a signal which has a signal-to-noise ratio which is greater than a signal-to-noise ratio of the interference signal obtained before the phase is controlled.

275. (New) The apparatus according to claim 270, further comprising an arrangement configured to receive the offset information, and control the path-length difference over a further range that is longer than the initial range.

276. (New) The apparatus according to claim 264, wherein the system includes at least one detector array which detects the at least one interference signal.

277. (New) A method for controlling a phase of a signal, comprising:

(a) obtaining at least one interference signal which is based on a first signal from a sample and a second signal from a reference;

(b) during step (a), modulating the phase of the at least one interference signal to produce first information;

(c) determining offset information between the first signal and the second signal based on the first information;

(d) controlling the phase of the interference signal using the offset information to generate second information; and

(e) generating an image which includes a plurality of depth profiles of at least a portion of the sample using the second information.

278. (New) The method according to claim 277, wherein the first information includes a modulated interference signal.

279. (New) The method according to claim 277, further comprising the step of demodulating the first information using at least one periodic signal, wherein the offset information is determined based on the demodulated first information.

280. (New) The method according to claim 277, wherein the offset information includes a path-length difference between the first signal and the second signal.

281. (New) The method according to claim 277, further comprising the step of controlling an initial range of the path-length difference.

282. (New) The method according to claim 277, wherein the range is modulo a wavelength of the path-length difference.

283. (New) The method according to claim 280, wherein the path-length difference is an optical path-length difference.

284. (New) The method according to claim 277, wherein step (c) is performed by modifying a path-length difference between the first signal and the second signal.

285. (New) The method according to claim 284, wherein the path-length difference is an optical path-length difference.

286. (New) The method according to claim 277, wherein the second information includes a phase-stabilized signal which is associated with the interference signal.

287. (New) The method according to claim 277, wherein the second information includes a signal which has a signal-to-noise ratio which is greater than a signal-to-noise ratio of the interference signal obtained before the phase is controlled.

288. (New) The method according to claim 283, further comprising an arrangement configured to receive the offset information, and control the path-length difference over a further range that is longer than the initial range.

289. (New) An apparatus for optical imaging, comprising:

a) an interferometer;

b) a spectral separating unit which splits signal received from the interferometer into a plurality of optical frequencies; and

c) a plurality of detectors, each detector having a capability of detecting at least a portion of the optical frequencies received from the spectral separating unit, wherein the sample is scanned in a series of simultaneous illuminations of substantially all of the area of the sample.

290. (New) An apparatus for optically imaging at least one portion of the sample, comprising:

a) a spectral separating arrangement configured to receive a plurality of electro-magnetic signals from an interferometer, and to separate the electro-magnetic signals into a plurality of spectral bands, the electromagnetic signals being associated with characteristics of the at least one portion of the sample, wherein more than one section of the sample is irradiated simultaneously; and

b) a detecting arrangement configured to detect at least one of the spectral bands received from the spectral separating arrangement, and configured to generate a resultant signal for use to image at least one portion of the at least one portion of the sample.

291. (New) A logic arrangement to provide data associated with optical imaging of at least one portion of a sample, which, when executed by a processing arrangement, configures the processing arrangement to execute the steps comprising of:

a) receiving signals that correspond to spectral bands of more than one electro-magnetic signals from a detecting arrangement, the detecting arrangement detecting the

spectral bands that are separated from the electro-magnetic signals by a spectral separating arrangement, the spectral separating arrangement receiving the electro-magnetic signals from an interferometer, the electromagnetic signals being associated with characteristics of the at least one portion of the sample, wherein more than one section of the sample is irradiated simultaneously; and

b) generating the data based on information corresponding to the received signals.

292. (New) A method for providing data associated with optical imaging of at least one portion of a sample, comprising the steps of:

a) receiving signals that correspond to spectral bands of the at least one electro-magnetic signal from a detecting arrangement, the detecting arrangement detecting the spectral bands that are separated from the at least one electro-magnetic signal by a spectral separating arrangement, the spectral separating arrangement receiving the electro-magnetic signals from an interferometer, the at least one electromagnetic signal being associated with characteristics of the at least one portion of the sample, wherein more than one section of the sample is irradiated simultaneously; and

b) generating the data based on information corresponding to the received signals.

293. (New) A storage medium including executable instructions thereon to provide data associated with optical imaging of at least one portion of a sample, wherein, when the executable instructions are executed by a processing system, the executable instructions configure the processing system to perform the steps comprising of:

a) receiving signals that correspond to spectral bands of a plurality of electro-magnetic signal from a detecting arrangement, the detecting arrangement detecting the

spectral bands that are separated from the electro-magnetic signals by a spectral separating arrangement, the spectral separating arrangement receiving the electro-magnetic signals from an interferometer, the electromagnetic signals being associated with characteristics of the at least one portion of the sample, wherein more than one section of the sample is irradiated simultaneously; and

b) generating the data based on information corresponding to the received signals.

294. (New) An apparatus for tracking a phase of at least one electro-magnetic signal so as to reduce an attenuation of the at least one signal due to its fringe instability, comprising:

a processing arrangement configured to:

a. receive information associated with the at least one signal,

b. adjust the phase of the at least one signal,

c. obtain a position of a signal section of the at least one signal,

d. modify at least one characteristic of the at least one signal if the position of the signal section is provided away from a peak of the at least one signal by more than a predetermined distance, and

e. repeat steps (c) and (d) until the at least one signal is within the predetermined distance from the peak.

295. (New) The apparatus according to claim 294, wherein the information corresponds to a combination of at least one of the spectral bands which are separated from the at least one electro-magnetic signal by a spectral separating arrangement.

296. (New) A logic arrangement for tracking a phase of at least one electro-magnetic signal so as to reduce an attenuation of the at least one signal due to its fringe instability, which, when executed by a processing arrangement, configures the processing arrangement to execute the steps comprising of:

a) receiving information associated with the at least one signal;

b) adjusting the phase of the at least one signal;

c) obtaining a position of a signal section of the at least one signal;

d) modifying at least one characteristic of the at least one signal if the position of the signal section is away from a peek of the at least one signal by more than a predetermined distance; and

e) repeating steps (c) and (d) until the at least one signal is within the predetermined distance from the peak.

297. (New) A method for tracking a phase of at least one electro-magnetic signal so as to reduce an attenuation of the at least one signal due to its fringe instability, comprising the steps of:

a) receiving information associated with the at least one signal;

b) adjusting the phase of the at least one signal;

c) obtaining a position of a signal section of the at least one signal;

d) modifying at least one characteristic of the at least one signal if the position of the signal section is away from a peek of the at least one signal by more than a predetermined distance; and

e) repeating steps (c) and (d) until the at least one signal reaches a further position that is within the predetermined distance from the peak.

298. (New) A storage medium including executable instructions thereon for tracking a phase of at least one electro-magnetic signal so as to reduce an attenuation of the at least one signal due to its fringe instability, wherein, when the executable instructions are executed by a processing system, the executable instructions configure the processing system to perform the steps comprising of:

a) receiving information associated with the at least one signal;

b) adjusting the phase of the at least one signal;

c) obtaining a position of a signal section of the at least one signal;

d) modifying at least one characteristic of the at least one signal if the position of the signal section is away from a peek of the at least one signal by a predetermined distance; and

e) repeating steps (c) and (d) until the at least one signal is within the predetermined distance from the peak.

299. (New) An apparatus for tracking a phase of at least one electro-magnetic signal associated with at least one portion of a sample, comprising:

a) a detecting arrangement obtaining at least one first interferometric signal comprising a plurality of spectral bands separated from the at least one electro-magnetic signal;

b) a phase modulator driver having a modulating frequency, and configured to modulate the at least one first signal based on the modulating frequency so as to generate at least one second signal;

c) a mixer configured to mix the at least one first signal with the at least one second signal so as to generate a resultant signal; and

d) a processing arrangement configured to (i) generate an offset based on the resultant signal, (ii) control a phase of the at least one first signal based on the offset to generate further information, and (iii) generate an image based on at least a portion of the sample using the further information.

300. (New) A logic arrangement for tracking a phase of at least one electro-magnetic signal associated with at least one portion of a sample, which, when executed by a processing arrangement, configures the processing arrangement to execute the steps comprising of:

a. obtaining at least one first interferometric signal comprising a plurality of spectral bands separated from the at least one electro-magnetic signal;

b. modulating the at least one first signal based on a modulating frequency of a modulating arrangement so as to generate at least one second signal;

c. mixing the at least one first signal with the at least one second signal so as to generate a resultant signal

d. generating an offset based on the resultant signal;

e. controlling a phase of the at least one first signal based on the offset to generate further information; and

f. generating an image based on at least a portion of the sample using the further information.

301. (New) A method for tracking a phase of at least one electro-magnetic signal associated with at least one portion of a sample, comprising the steps of:

a. obtaining at least one first interferometric signal comprising a plurality of spectral bands separated from the at least one electro-magnetic signal;

b. modulating the at least one first signal based on a modulating frequency of a modulating arrangement so as to generate at least one second signal;

c. mixing the at least one first signal with the at least one second signal so as to generate a resultant signal;

d. generating an offset based on the resultant signal;

g. controlling a phase of the at least one first signal based on the offset to generate further information; and

e. generating an image based on at least a portion of the sample using the further information.

302. (New) A storage medium including executable instructions thereon for tracking a phase of at least one electro-magnetic signal so as to reduce an attenuation of the at least one signal due to its fringe instability, wherein, when the executable instructions are executed by a processing system, the executable instructions configure the processing system to perform the steps comprising of:

a. obtaining at least one first interferometric signal comprising a plurality of spectral bands separated from the at least one electro-magnetic signal;

b. modulating the at least one first signal based on a modulating frequency of a modulating arrangement so as to generate at least one second signal;

c. mixing the at least one first signal with the at least one second signal so as to generate a resultant signal;

d. generating an offset based on the resultant signal;

e. controlling a phase of the at least one first signal based on the offset to generate further information; and

f. generating an image based on at least a portion of the sample using the further information.

303. (New) A probe for locating atherosclerotic plaque in a blood vessel, comprising:

a device receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a non-reflective reference;

at least one spectral separating unit which separates spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and a combination of the first and second electro-magnetic radiation into frequency components; and

at least one detection arrangement including a plurality of detectors, each detector capable of detecting at least a portion of at least one of the frequency components,

wherein at least one of:

c. the first and second electro-magnetic radiations interfere with one another, and

d. the frequency components of the first and second electro-magnetic radiations interfere with one another.

304. (New) A probe for locating atherosclerotic plaque in a blood vessel, comprising:

a device receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a reference;

at least one of spectral separating unit which separates spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and combination of the first and second electro-magnetic radiations into frequency components; and

at least one detection arrangement including a plurality of detectors, each detector capable of detecting at least a portion of at least one of the frequency components, wherein at least two of the detectors detect a common one of the frequency components, wherein a first one of the at least two of the detectors receives a first signal which has a first phase difference between the first and second electro-magnetic radiation, and a second one of at least two of the detectors receives a second signal which has a second phase difference between the first and second electro-magnetic radiation, the first and second phase differences being different from one another,

wherein at least one of:

c. the first and second electro-magnetic radiations interfere with one another, and

d. the frequency components of the first and second electro-magnetic radiations interfere with one another.

305. (New) An apparatus for delivering a therapeutic agent, comprising:

a) a probe disposed in the housing and comprising:

i. a device receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a non-reflective reference;

ii. at least one spectral separating unit which separates spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and a combination of the first and second electro-magnetic radiation into frequency components; and

iii. at least one detection arrangement including a plurality of detectors, each detector capable of detecting at least a portion of at least one of the frequency components,

wherein at least one of:

(I) the first and second electro-magnetic radiations interfere with one another, and

(II) the frequency components of the first and second electro-magnetic radiations interfere with one another; and

b) a conduit cooperating with the probe, and comprising a proximal end for receiving the therapeutic agent and a distal end for delivering the therapeutic agent at a predetermined location, the location being determined by imaging the environment in proximity to the distal end using the probe.

306. (New) An apparatus for delivering a therapeutic agent, comprising:

a) a probe disposed in the housing and comprising:

i. a device receiving at least one first electro-magnetic radiation from a sample and at least one second electro-magnetic radiation from a reference,

ii. at least one of spectral separating unit which separates spectrum of at least one of the first electro-magnetic radiation, the second electro-magnetic radiation and combination of the first and second electro-magnetic radiations into frequency components, and

iii. at least one detection arrangement including a plurality of detectors, each detector capable of detecting at least a portion of at least one of the frequency components, wherein at least two of the detectors detect a common one of the frequency components, wherein a first one of the at least two of the detectors receives a first signal which has a first phase difference between the first and second electro-magnetic radiation, and a second one of at least two of the detectors receives a second signal which has a second phase difference between the first and second electro-magnetic radiation, the first and second phase differences being different from one another,

wherein at least one of:

(I) the first and second electro-magnetic radiations interfere with one another, and

(II) the frequency components of the first and second electro-magnetic radiations interfere with one another; and

b) a conduit cooperating with the probe, and comprising a proximal end for receiving the therapeutic agent and a distal end for delivering the therapeutic agent at a predetermined location, the location being determined by imaging the environment in proximity to the distal end using the probe.